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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,831	04/02/2001	George Zheng Chen	P 0280083 PJS/ALP/P8339US	8466
7590 11/28/2005 Pillsbury Winthrop LLP 1600 Tysons Boulevard MCLEAN, VA 22102			EXAMINER CREPEAU, JONATHAN	
			ART UNIT 1746	PAPER NUMBER
DATE MAILED: 11/28/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/822,831

Applicant(s)

CHEN ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 and 26 is/are pending in the application.
- 4a) Of the above claim(s) 1-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-24 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 1-24 and 26. Claims 1-16 remain withdrawn from consideration. Claims 17-24 and 26 remain rejected for the reasons of record. Accordingly, this action is made final.

Claim Rejections - 35 USC § 102

2. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Fan et al (*Synthetic Metals*, 1999). The reference is directed to carbon nanotube (CNT)-polypyrrole (PPY) composites. The composites are made by an *in situ* polymerization method which results in a product having individual nanotubes coated by PPY (see column 2, first full paragraph). As such, the subject matter of claim 17 is anticipated.

3. Claim 17 is rejected under 35 U.S.C. 102(a) as being anticipated by Chen et al (*Advanced Materials*, 2000). The reference is directed to CNT-PPY composites. The composites are made by an *in situ* polymerization method which results in a product having individual nanotubes coated by PPY. As such, the subject matter of claim 17 is anticipated.

Claim Rejections - 35 USC § 103

4. Claims 18-24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niu (U.S. Patent 6,205,016) in view of Chen et al. or Fan et al.

Niu is directed to an electrochemical capacitor comprising two composite electrodes, each consisting of carbon nanotubes and a conductive polymer (see col. 6, lines 47-50; col. 7, lines 11-15; col. 8, lines 17-21). Regarding claims 18, 19, and 26, conducting members are in contact with the composites (see Fig. 1). An electrolyte separates the first and second electrodes (see col. 9, lines 37-47). Regarding claim 20, the electrically conductive polymers are selected from polyaniline, polypyrrole, polythiophene, and their derivatives (see col. 9, line 5). Regarding claims 21 and 22, the nanotubes may be non-ionized or negatively ionized (i.e., oxidized; see col. 14, lines 32-42). Regarding claim 23, the composites are in the form of “thin films” on the conducting members (see col. 9, lines 10-15). Regarding claim 24, the capacitor comprises a cylindrical shape with an insulating member between the rolled electrodes (see col. 11, lines 23-36).

The reference does not expressly teach the process of making the composites as recited in claims 17, 18, and 26, nor the structure implied by the process steps.

As set forth above, both Chen et al. and Fan et al. teach a CNT-PPY composite made by an *in-situ* polymerization process.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to make the composites of Niu by the processes of Chen or Fan. Regarding Chen, in the last paragraph of the

article, the reference teaches that a CNT-PPY composite has been synthesized that “has a high concentration of well-dispersed nanotubes that are wetted by the continuous polymer phase.” Further, Chen et al. disclose and teach “the preparation of a remarkably uniform PPy coating on individual CNTs, which promotes controlled modification of the outer surface of CNTs to provide selectable functionalities.” As such, this would motivate the artisan to form the composite of Niu by the process of Chen. Further, Chen teaches that “simple ECPs show interesting physicochemical properties exploitable for batteries, sensors, light-emitting diodes, and electrochromic displays.” Thus, Chen also suggests using the material in a device such as a capacitor.

Regarding the Fan reference, this reference teaches that the conductivity of the CNT-PPY composite is greater than the conductivity of PPY. Further, the reference also contemplates the use of the material in certain devices, teaching that “conducting polymer microtubes have attracted much attention because of the their applications in electronic and electrooptical devices.” As such, the artisan would also be motivated by Fan to make the composite of Niu by an *in situ* polymerization process, and would have a reasonable expectation of success in doing so.

Response to Arguments

5. Applicant’s arguments filed September 9, 2005 have been fully considered but they are not persuasive. Regarding the Chen et al. publication, Applicants state that this reference only qualifies as prior art under 35 USC 102(a). This appears to be correct as the Wiley InterScience

web site lists the online publication date as April 3, 2000, less than one year before the application filing date. Applicants state that a declaration will be submitted to remove this reference as prior art, but such declaration has not been received as of the date of the drafting of this Office action.

Regarding the Fan et al. publication, Applicants state that this reference is not anticipatory of claim 17 because the reference discloses powders and not a “unitary polymer mass.” Although the Examiner does not necessarily concur with this characterization of the reference, it is submitted that such disclosure or conclusion anticipates the claimed subject matter because each particle in the powder can be considered to be its own “unitary polymer mass.” Further, each particle would contain plural nanotubes since the size of each coated tube is disclosed as 80-100 nm, too small for one nanotube to constitute a particle. Applicants further state that the reference does not describe the product as a “composite”; however, this term is used in the abstract and in the sentence immediately preceding Figure 1. Additionally, there is not seen to be a difference between the process limitations of claim 17 and the process employed by Fan et al. The products appear to be substantially identical, with a possible difference (as characterized by Applicants on page 3 of the specification) being the size of the product produced. However, the present claim language is not concerned with size and is not seen to distinguish over the disclosure of Fan et al.

Regarding the combination of Niu and Fan et al., Applicants argue, among other things, that the powder of Fan et al. is not suitable for the production of composites in the form of a unified polymer mass. However, it is submitted that the artisan would be sufficiently skilled to

manipulate the relative amounts of pyrrole monomer and carbon nanotubes in the method of Fan et al. so as to result in a unitary composite that possesses the advantageous properties identified by Niu. The disclosure of Fan et al. gives no indication of the relative amounts of materials, whereas the disclosure of Niu has such a discussion in column 9. It is maintained that an artisan would have a reasonable expectation of success upon making the electrodes of Niu, in the form of a unitary polymer mass, by the method of Fan et al.

Conclusion

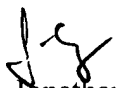
6. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Primary Examiner
Art Unit 1746
November 22, 2005